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IS 1104 (1984): Brushes, lettering [CHD 24: Brushware]



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IS : 1104 - 1984

Indian Standard
SPECIFICATION FOR BRUSHES, LETTERING
(Second Revision)

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INDIAN STANDARDS INSTITUTION
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**AMENDMENT NO. 1 SEPTEMBER 2004
TO
IS 1104 : 1984 SPECIFICATION FOR
BRUSHES, LETTERING**

(Second Revision)

(*Page 8, clause 6.1*) -- Substitute 'Lindane 6.5% DP (*see* IS 14834 : 2000*) or methyl parathion 2% DP (*see* IS 8960 : 1978§)' for 'DDT dusting powder (*see* IS : 564 - 1975*)'.

(*Page 8, footnote marked '***) --- Substitute the following for the existing footnote:

'*Lindane dusting powder -- Specification.'

(*Page 8, footnote*) - - Insert the following footnote at the end:

'§Specification for methyl parathion dusting powders.'

(CHD 24)

Indian Standard

SPECIFICATION FOR BRUSHES, LETTERING

(Second Revision)

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Indian Standard
SPECIFICATION FOR BRUSHES, LETTERING
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 15 January 1984, after the draft finalized by the Brushware Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was originally issued in 1957, and covered the requirements of lettering brushes filled with bristles and set in suitable cement. In its first revision in 1968, two types of lettering brushes were specified, one with bristles meant for writing broad letters and other with mongoose hair meant for fine lettering. The sizes of the brushes were also rationalised to seven to reduce unnecessary varieties and dimensions of the ferrule were aligned with the revised dimensions of ferrule of artists brushes (*see IS : 1103-1971**).

0.3 In this second revision, only one type of lettering brush has been specified, namely one with bristles for writing broad letters, since the artists' brushes with mongoose hair are now covered in IS : 1103-1971*. Moreover, in this revision the brush sizes are being changed to the existing 12 sizes in commercial practice.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the method of sampling and test for lettering brushes filled with bristles and set in a suitable cement.

*Brushes, artists' (*second revision*).

†Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 5060-1969*, and IS : 707-1968† shall apply.

2.2 Approved Tender Sample — The sample accepted by the indenter or an inspection authority as the basis of supply. When a sample is tested and approved by the purchaser or an inspection authority, the results of such tests as will permit the supplier to meet the limits imposed by the specification for deliveries shall be made available to the supplier.

3. SIZES

3.1 The lettering brushes shall be of 12 sizes, as given in col 2 of Table 1.

4. REQUIREMENTS

4.1 Materials

4.1.1 Pure bristles either black or white (conforming to IS : 1844-1975‡), of fine quality and of natural uniform colour shall be used in the manufacture of lettering brushes. They shall be selected and properly straightened. As regards colour, lustre, stiffness and flexibility, the bristles shall match those used in the approved sample.

4.1.2 Timber — Any of the timber species listed in Appendix A shall be used in the manufacture of handles of the brushes.

4.1.2.1 The timber shall be reasonably straight-grained and well seasoned to a moisture content not exceeding 15 percent when tested by moisture meter or in case of dispute by the oven dry method given in Appendix B.

4.1.2.2 The timber shall be free from brashness, any kind of decay (rot), insect attack, centre heart (pith), knots except pin knots, cracks, warp and any other defect which may reduce the life of the brush or affect its utility.

4.1.3 Ferrule — The ferrule shall be made of 0.250 to 0.315 mm thick nickel-plated brass sheet or aluminium sheet. The ferrule shall be either seamless or lapped end soldered.

4.1.4 Cement — Any suitable cement capable of satisfying the tests prescribed under 4.5 shall be used.

4.1.5 Silk Thread — A suitable silk thread for binding the hair of brushes shall be used.

4.2 Dimensions and Tolerances — The brushes shall conform to the dimensions given in Table 1.

*Glossary of terms used in brushware industry.

†Glossary of terms applicable to timber technology and utilization (second revision).

‡Specification for bristles (first revision).

TABLE 1 DIMENSIONS OF BRUSHES, LETTERING, ROUND
(*Clauses 3.1 and 4.2*)

SL No.	SIZE No.	PROTRUSION OF BRISTLES <i>Min</i>	F E R R U L E			LENGTH OF HANDLE OUT OF FERRULE, <i>Min</i>	OVERALL LENGTH OF BRISTLES
			Diameter at Mouth <i>B</i>	Diameter at Bottom <i>C</i>	Length <i>D</i>		
(1)	(2)	<i>A</i> (3)	(4)	(5)	(6)	(7)	(8)
		mm	mm	mm	mm	mm	mm
i)	L-1	13	2.5	4.0	35	200	44.0
ii)	L-2	15	3.0	5.0	35	200	44.0
iii)	L-3	18	3.5	5.5	35	200	44.0
iv)	L-4	20	4.0	6.0	35	205	44.0
v)	L-5	22	4.5	6.5	40	205	44.0
vi)	L-6	25	5.0	7.0	40	215	44.0
vii)	L-7	28	5.5	7.5	40	220	44.0
viii)	L-8	30	6.5	8.5	40	225	51.0
ix)	L-9	33	7.0	9.0	45	235	51.0
x)	L-10	35	8.0	10.0	45	240	57.0
xi)	L-11	38	9.0	11.5	45	245	57.0
xii)	L-12	40	10.0	12.5	45	250	57.0

Note — Letters *A* to *E* correspond to those given in Fig. 1.

4.2.1 The tolerance on the linear dimensions shall be as follows:

<i>Nominal Dimension</i>	<i>Tolerance</i> mm
Up to 15 mm	± 1.0
Above 15 mm but below 40 mm	± 2.0
40 mm and above	± 3.0

For protusion of hair the tolerance shall be $\pm \frac{1}{0}$ mm.

4.3 Manufacture — The lettering brushes shall generally conform to the shape and design as shown in Fig. 1.

4.3.1 The ferrule, if lapped, shall be properly soldered.

4.3.2 The handle shall be shaped to suit the ferrule.

4.3.3 The bristles shall be properly bound with silk thread and cemented to form a tuft which shall be securely set inside the ferrule. The tuft shall be free from loose bristles.

4.4 Workmanship and Finish — The handle shall be round and finished smooth all over. It shall be properly varnished or lacquered.

4.4.1 The ferrule shall be free from sharp edges.

4.4.2 The ferrule shall be properly secured to the handle and clinched as shown in Fig. 1.

4.4.3 The ferrule of different sizes of brushes shall be completely filled with filling material. This shall be ascertained by pressing the filling material from one side near the ferrule.

4.4.4 In respect of workmanship and finish, the brushes shall match the approved sample.

4.5 Test Requirements

4.5.1 Pull Test — The tuft of the filling material of the brush shall not come out when subjected to straight pull with thumb and finger grip. Bristles coming out of the cement shall be deemed as failure.

4.5.2 Performance Test — The tuft of the filling material of the brush, when dipped in water till thoroughly wet, and then withdrawn and given a slight jerk shall assume the shape as shown in Fig. 1.

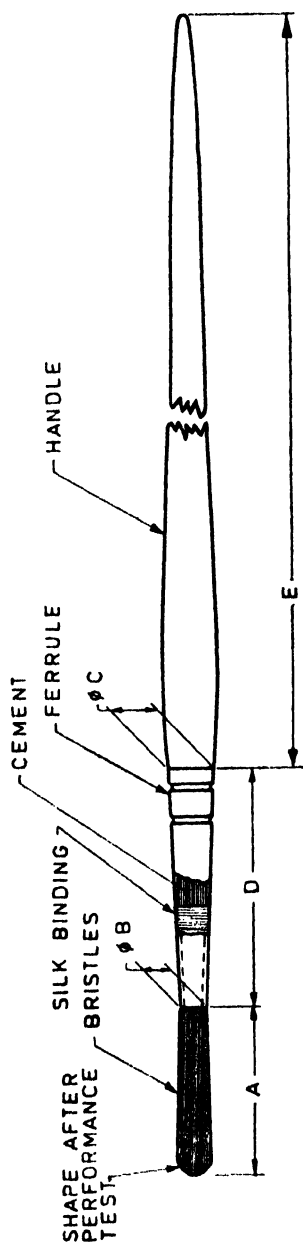


FIG. 1 BRUSH, LETTERING

5. MARKING

5.1 Unless otherwise agreed to between the indenter or the inspection authority and the supplier, each brush shall be legibly and indelibly marked or stamped with the manufacturer's name or recognized trade-mark, if any; the year of manufacture; the warranty of the bristles and the size of the brush.

5.1.1 The brushes may also be marked with the ISI Certification Mark.

NOTE— The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. PRESERVATION

6.1 The filling material of the brushes shall be liberally dusted, before packing, with a mixture of 5 parts (by mass) of DDT, dusting powder (*see* IS : 564-1975*) and 95 parts (by mass) of French chalk (*see* IS : 380-1978†), or talc powder. Alternatively, pieces of naphthalene balls (*see* IS : 539-1974‡) shall be used in the packing box for the brushes.

7. PACKING

7.1 The brushes shall be packed in packages mutually agreed to between the indenter, inspection authority and the supplier.

8. TENDER SAMPLES AND SAMPLING

8.1 Tender Samples — The supplier shall submit four identical tender samples of brushes of each denomination and quality for approval.

8.1.1 The indenter or inspection authority shall retain one of the four approved tender samples against each item, till the completion of order.

8.2 Sampling — The method of drawing representative samples of the brushes and the criteria for conformity shall be as prescribed in Appendix C.

*DDT dusting powders (*second revision*).

†French chalk, technical (*second revision*).

‡Naphthalene (*second revision*).

APPENDIX A

(Clause 5.1.2)

SPECIES OF TIMBER FOR THE MANUFACTURE OF
HANDLES FOR ARTISTS' BRUSHES

A-1. The list of the species of timber approved for the manufacture of handles for lettering brush is given below:

Standard Trade Name		Botanical Name
Romon	Devanagari	
aini	ऐनी	<i>Artocarpus hirsuta</i> Lamk., fam. Moraceae
banati	बनाती	<i>Lophopetalum wightianum</i> Arn., fam. Celastraceae
bijasal	बीजसाल	<i>Pterocarpus marsupium</i> Roxb., fam. Leguminosae
champak	चम्पक	<i>Michelia champaca</i> Linn., fam. Magnoliaceae
chickrassi	चिकरासी	<i>Chukrasia tabularis</i> A. Juss., fam. Meliaceae
dhaman	धामन	<i>Grewia tiliifolia</i> Vahl., fam. Tiliaceae
gamari (gumhar)	गमारी (गुम्हार)	<i>Gmelina arborea</i> Roxb., fam. Verbenaceae
haldu	हल्दू	<i>Adina cordifolia</i> Hook. f., fam. Rubiaceae
kaim	कैम	<i>Mitragyna parvifolia</i> (Roxb.) Korth., syn. <i>Stephegyne parvifolia</i> Korth., fam. Rubiaceae
kanju	काजू	<i>Holoptelea integrifolia</i> Planch., fam. Ulmaceae
kathal	कटहल	<i>Artocarpus heterophyllus</i> Lamk., syn. <i>A. integrifolia</i> Linn. f., fam. Moraceae
kuthan	कूथन	<i>Hymenodictyon excelsum</i> Wall., fam. Rubiaceae
lambapatti	लम्बापत्ती	<i>Planchonella longipetiolatum</i> H. J. Lam., syn. <i>Sideroxylon longipetiolatum</i> King et Prain, fam. Sapotaceae
nim-chameli	नीम-चमेली	<i>Millingtonia hortensis</i> Linn f., fam. Bignoniaceae
kodapalai choupaini (piney)	कोडपलई चौपेनी (पिने)	<i>Kingiodendron pinnatum</i> (Roxb.) Harms, syn. <i>Hardwickia pinnata</i> Roxb., fam. Leguminosae
toon	तून	<i>Toona ciliata</i> Roem., syn. <i>Cedrela toona</i> Roxb., fam. Meliaceae

APPENDIX B

(Clause 4.1.2.1)

DETERMINATION OF MOISTURE CONTENT FOR TIMBER USED IN BRUSHES, LETTERING

B-1. TEST SPECIMEN

B-1.1 The entire block used in lettering brushes may form the test specimen for determination of moisture content or a coupon cut from the test specimen may, as well, be used for moisture content determination. When for any reason additional determination of moisture content is required, separate samples shall be prepared from the sample material as is used in preparing the test specimens. Smaller specimens may be used when deemed necessary. The test shall be carried out immediately after cutting the specimen.

B-2. PROCEDURE

B-2.1 Weigh accurately each test specimen. This specimen shall then be dried in a ventilated oven at a temperature of $105 \pm 2^{\circ}\text{C}$ until the mass becomes constant between two successive weighings made at an interval of not less than one hour.

B-3. CALCULATION

B-3.1 The moisture content, expressed as a percentage of the oven-dry mass is given by the formula:

$$\frac{M_1 - M_o}{M_o} \times 100$$

where

M_1 = initial mass in g of the test specimen, and

M_o = oven-dry mass in g of the test specimen.

APPENDIX C(*Clause 8.2*)**SAMPLING OF BRUSHES, LETTERING****C-0. GENERAL**

C-0.1 The supplier shall submit four identical brushes of each size and quality for approval.

C-0.2 The indenter or inspection authority shall retain one of the four samples approved against each item till the completion of the order.

C-1. SCALE OF SAMPLING

C-1.1 Lot — In any consignment, all the brushes of the same size and quality shall be divided into groups of 500 brushes or less and each such group shall constitute a lot. Care shall be taken to ensure that brushes included in a lot do not differ in construction, as far as possible.

C-1.1.1 The conformity of the brushes in a lot to the requirements of this specification shall be ascertained for each lot separately. The number of brushes to be selected for this purpose shall be in accordance with col 1 and 2 of Table 2.

**TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE
NUMBER OF DEFECTIVES**

NUMBER OF BRUSHES IN A LOT	VISUAL AND DIMENSIONAL INSPECTION		DESTRUCTIVE TESTS	
	Sample Size	Permissible Number of Defectives	Sample Size	Permissible Number of Defectives
<i>N</i>	<i>n</i>			
(1)	(2)	(3)	(4)	(5)
Up to 25	5	0	2	0
26 „ 50	10	0	3	0
51 „ 100	15	1	4	0
101 „ 200	20	1	5	0
201 „ 300	30	2	7	1
301 „ 500	40	3	10	1

C-1.1.2 The brushes shall be selected at random. To ensure randomness of selection one of the following procedure is recommended for use:

- a) If all the brushes in a lot are packed in one box, then starting from any brush, count them in any suitable order as 1, 2, ..., up to r and so on, where r is the integral of N/n (N and n being the lot size and sample size, respectively). Every r th brush thus counted shall be withdrawn to constitute the sample.
- b) If the brushes in a lot are packed in more than one box, approximately equal number of brushes shall be packed up at random from as many boxes as possible so as to obtain the required number of brushes as specified in Table 2.

C-2. CRITERIA FOR CONFORMITY

C-2.1 Visual and Dimensional Characteristics — All the brushes drawn as under **C-1.1** shall be first inspected for visual and dimensional characteristics (see **4.2**, **4.3** and **4.4** including performance test in **4.5.2**). A brush shall be considered as defective if it fails to meet the requirements for any of the characteristics under consideration. If the number of defective brushes is less than or equal to the corresponding permissible number of defectives given in col 3 of Table 2, the lot shall be declared to have satisfied the requirements for these characteristics. If however, the number of defective brushes exceeds the permissible number, the lot shall be deemed as not conforming to the requirements for these characteristics.

C-2.2 Destructive Tests — The lot having been found satisfactory for visual and dimensional characteristics (see **4.2.1**) shall be finally tested for pull test. For this purpose, a number of brushes in accordance with col 4 of Table 2 shall be drawn at random from those already inspected for visual and dimensional characteristics (see **C-2.1**).

C-2.2.1 The lot shall be considered to have satisfied the requirements for the destructive test if the number of brushes failing in the destructive test is less than or equal to the corresponding number given in col 5 of Table 2.

C-2.3 A lot shall be declared as conforming to the specification if it satisfies the requirements of the visual, dimensional and destructive test prescribed in **4.2**, **4.4** and **4.5**.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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